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Your Reference: PCT/CA00/00779  
Our Reference: 571-766

**PRELIMINARY AMENDMENT**

The Commissioner of Patents  
& Trademarks  
Washington, D.C.  
U.S.A. 20231

Dear Sir:

**Re: National Phase Entry of PCT/CA00/00779**  
**Title: Incorporation and Application of Biomolecular interactions within a Carrier**  
**Applicant: HOGUE, Christopher V.W., et al.**

This is filed as a preliminary amendment pursuant to 37 C.F.R §1.115 to the above-noted patent application that is entering National Phase in the United States on same date.

Please amend the application as follows:

**In the Claims**

Please amend claims 5, 6, 7, 8, 9, 12, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28, 29, 30, 31, 33, 35, 36, 37, 42 and 44 currently on file as a result of an Article 34 amendment in the International phase with claims 5, 6, 7, 8, 9, 12, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28, 29, 30, 31, 33, 35, 36, 37, 42 and 44 as follows:

5. [Amended] The carrier according to claim 4 wherein the carrier comprises a silica based glass.

6. [Amended] The carrier according to claim 4 wherein the material is a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor.

7. [Amended] The carrier according to claim 1 derived by a sol-gel processing method.

8. [Amended] The carrier according to claim 1 wherein the bimolecular interaction is bioactive.
9. [Amended] The carrier according to claim 1 pre-treated to contain components found in an animal fluid.
12. [Amended] The carrier according to claim 8 wherein the carrier is synthesized under sterile conditions or sterilized subsequent to synthesis using conventional sterilization methods.
16. [Amended] The method according to claim 14 wherein the corresponding functionalized metal alkoxide is metal chloride, silazane, or polyglycerylsilicate.
17. [Amended] The method according to claim 13 wherein the reacting occurs in an acidic or basic aqueous medium.
18. [Amended] The method according to claim 13 wherein the reactant and water are in a molar ratio of from about 1:1 to about 20:1 water/reactant.
19. [Amended] The method according to claim 13 wherein the casting of the mixture is in a mold, a column, a microtiter well, a spot on a surface by pin spotting, inkjet deposition or screen printing ; or a film on a surface by dipcasting, spin-casting or spraying.
20. [Amended] The method according to claim 13 wherein the gel and aging is at temperatures from about 0°C up to about 40°C.
21. [Amended] The method according to claim 20 wherein the partial drying is at temperatures from about 4° to about 40°C.
25. [Amended] The method according to claim 22 wherein mechanical, chemical and thermal stability is imparted by combination of precursors and additives.
26. [Amended] The method according to claim 22 wherein mechanical, chemical and thermal stability is imparted by choice of aging and drying methods.
27. [Amended] The method according to anyone of claims 22-24 wherein mechanical, chemical and thermal stability is imparted by combination of precursors and additives, and by choice of aging and drying methods.
28. [Amended] The method according to claim 22 wherein the carrier comprises a silica based glass.
29. [Amended] The method according to claim 22 wherein the carrier comprises a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide

or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor.

30. [Amended] The method according to claim 22 wherein the carrier is derived by a sol-gel processing method.

31. [Amended] The method according to claim 22 wherein the carrier comprises a matrix of inorganic, organic or organic and inorganic material and containing a biomolecular interaction entrapped within the matrix, wherein the biomolecular interaction comprises two entities that can be reversibly, dissociated from the other and wherein the biomolecular interaction is bioactive within the matrix.

33. [Amended] The method according to claim 32 wherein the biomolecular interaction is incorporated within the carrier that comprises a matrix of inorganic, organic or organic and inorganic material and containing a biomolecular interaction entrapped within the matrix, wherein the biomolecular interaction comprises two entities that can be reversibly, dissociated from the other and wherein the biomolecular interaction is bioactive within the matrix.

35. [Amended] The method according to claim 32 wherein the carrier is prepared from a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor.

36. [Amended] The method according to claim 32 wherein the carrier is derived by a sol-gel processing method.

37. [Amended] The method according to claim 32 wherein the biomolecular interaction is bioactive.

42. [Amended] The method of detecting signals generated by an array according to claim 38 wherein the signal is excited by a laser, lamp or light emitting diode, either directly or through an optical fiber, and fluorescence is detected using a CCD camera.

44. [Amended] The method of claim 43 wherein the carrier comprises a matrix of inorganic, organic or organic and inorganic material and containing a biomolecular interaction entrapped within the matrix, wherein the biomolecular interaction comprises two entities that can be reversible, dissociated from the other and wherein the biomolecular interaction is bioactive within the matrix.

#### **Remarks**

This preliminary amendment is filed together with the National Phase Entry of PCT Application PCT/CA00/00779. During prosecution of the PCT application the claims

were amended. In the current amendment, claim 44 was amended by replacing "use" with "method".

The applicant has also amended the claims to delete the multiple dependencies which were present in the PCT claims. The applicant requests that the preliminary amendment be entered prior to the calculation of the fees which are due on the National Phase Entry.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **"Version with markings to show changes made"**.

No other changes have been made to the claims. In view of the forgoing, favourable consideration of the application is respectfully requested and a timely Notice of Allowance be issued in this case.

Respectfully submitted,

**HOGUE, Christopher V. W., et al.**

BY



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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

### In the Claims

Claims 5, 6, 7, 8, 9, 12, 16, 17, 18, 19, 20, 21, 25, 26, 27, 28, 29, 30, 31, 33, 35, 36, 37, 42 and 44 have been amended as follows:

5. [Amended] ~~The carrier according to claim 1 wherein the~~The carrier according to claim 4 wherein the carrier comprises a silica based glass.
6. [Amended]~~The carrier according to 1 to 5~~4 wherein the material is a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor.
7. [Amended]~~The carrier according to any one of claims 1-5~~claim 1 derived by a sol-gel processing method.
8. [Amended]~~The carrier according to claim 1 wherein the~~The carrier according to anyone of claims 1-6 wherein the bimolecular interaction is bioactive.
9. [Amended] The carrier according to claim ~~7 or 8~~1 pre-treated to contain components found in an animal fluid.
12. [Amended] The carrier according to ~~claims 7-11~~claim 8 wherein the carrier is synthesized under sterile conditions or sterilized subsequent to synthesis using conventional sterilization methods.

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16.[Amended] The method according to claim ~~13~~14 wherein the corresponding functionalized metal alkoxide is metal chloride, silazane, or polyglycerylsilicate.

17.[Amended]The method according to ~~claims 13-16~~claim 13 wherein the reacting occurs in an acidic or basic aqueous medium.

18.The method according to ~~claims 13-17~~claim 13 wherein the reactant and water are in a molar ratio of from about 1:1 to about 20:1 water/reactant.

19.[Amended]The method according to ~~claims 13-18~~claim 13 wherein the casting of the mixture is in a mold, a column, a microtiter well, a spot on a surface by pin spotting, inkjet deposition or screen printing ; or a film on a surface by dipcasting, spin-casting or spraying.

20.[Amended]The method according to ~~claims 13-19~~claim 13 wherein the gel and aging is at temperatures from about 0°C up to about 40°C.

21.[Amended]The method according to ~~claims 13-20~~claim 20 wherein the partial drying is at temperatures from about 4° to about 40°C.

25.[Amended]The method according to ~~anyone of claims 22-24~~claim 22 wherein mechanical, chemical and thermal stability is imparted by combination of precursors and additives.

26.[Amended]The method according to ~~anyone of claims 22-24~~claim 22 wherein mechanical, chemical and thermal stability is imparted by choice of aging and drying methods.



35. [Amended]The method according to ~~any one of claims~~claim 32~~or 34~~ wherein the carrier is prepared from a silicon, titanium, vanadium or cerium-based metal alkoxide, alkylated metal alkoxide or otherwise functionalized metal alkoxide or a corresponding metal chloride, silazane, polyglycerylsilicate or other silicate precursor.

36. [Amended]The method according to ~~any one of claims 32-35~~claim 32 wherein the carrier is derived by a sol-gel processing method.

37. [Amended]The method according to ~~any one of claims 32-36~~claim 32 wherein the biomolecular interaction is bioactive.

42. [Amended]The method of detecting signals generated by an array according to ~~any one of claims 38-41~~claim 38 wherein the signal is excited by a laser, lamp or light emitting diode, either directly or through an optical fiber, and fluorescence is detected using a CCD camera.

44. [Amended] ~~The use of the carrier of any one of claims 1 to 12 to conduct the method of any one of claims 32-43. The method of claim 43 wherein the carrier comprises a matrix of inorganic, organic or organic and inorganic material and containing a biomolecular interaction entrapped within the matrix, wherein the biomolecular interaction comprises two entities that can be reversible, dissociated from the other and wherein the biomolecular interaction is bioactive within the matrix.~~